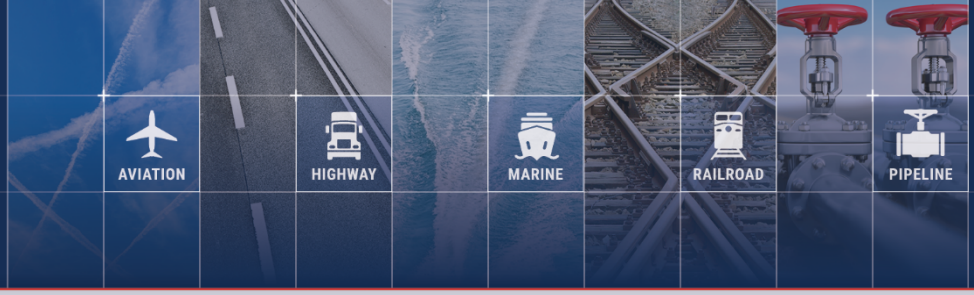

Aviation Investigation Final Report

Location:	Odessa, Texas	**Accident Number:**	FTW01FA117
Date & Time:	May 14, 2001, 13:55 Local	**Registration:**	N66791
Aircraft:	Convair BT-13A	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The commercial pilot was undergoing his 7th hour of dual familiarization training in the airplane. The airplane approached the airport from the east, over flew the south end of the airport, and then executed a left teardrop turn to runway 34. According to witnesses at the airport, the airplane was on final approach to runway 34, approximately 150 feet agl, when they heard power applied to the engine. Subsequently, the right wing dropped, the airplane impacted the ground, contacted a steel pole, and came to a stop upright. The witness accounts and ground scars are consistent with the airplane encountering a stall. One witness, who was located on the airport, reported that at the time of the accident the wind was from the south at 10 mph. Two minutes prior to the accident, two weather observation facilities that are located 7 miles northeast and 9 miles northwest of the accident site, reported wind from 200 degrees at 13 knots and gusting to 20 knots and wind from 210 degrees at 11 knots and gusting to 19 knots, respectively. The airframe and engine were examined and no pre-impact anomalies were noted that would have precluded their operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's failure to maintain the minimum required airspeed for flight, which resulted in a loss of control while performing a go-around. A contributing factor to the accident was the gusty tailwind condition.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: GO-AROUND (VFR)

Findings
1. (F) WEATHER CONDITION - TAILWIND
2. (F) WEATHER CONDITION - GUSTS
3. GO-AROUND - ATTEMPTED - PILOT IN COMMAND
4. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
5. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
6. TERRAIN CONDITION - GROUND
7. OBJECT - POLE

Factual Information

HISTORY OF FLIGHT

On May 14, 2001, at 1355 central daylight time, a 1942 vintage Convair BT-13A single-engine airplane, N66791, was destroyed when it impacted terrain during an attempted go-around at the Bates Field Airport near Odessa, Texas. The airplane was registered to the American Airpower Heritage Museum of Midland, Texas, and operated by The Confederate Airforce (CAF) of Midland, Texas. The flight instructor and the commercial pilot receiving instruction were fatally injured. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 instructional flight. The local flight originated from the Midland International Airport (MAF), Midland, Texas, at 1257.

According to personnel from the CAF, the commercial pilot was undergoing his 7th hour of familiarization training in the accident airplane. Communication transcripts and radar data from the Midland Air Traffic Control (ATC) Facility revealed that the airplane departed MAF, climbed to 7,000 feet msl, and flew to a practice area southwest of the airport. The airplane maneuvered for approximately 40 minutes, and at 1353, reported to ATC that they would be "goin to Bates [Airport] for just a minute." No further communications, or distress calls, were received from the airplane.

Radar data revealed that the airplane approached Bates Field from the east. It over flew the south end of the airport and executed a left teardrop turn to runway 34. According to witnesses at the airport, the airplane was on final approach to runway 34, approximately 150 feet agl, when they heard power applied to the engine. Subsequently, the right wing dropped, the airplane impacted the ground, contacted a steel pole, and came to a stop upright. A postaccident fire erupted beneath the engine and was extinguished by the initial responders.

One witness, who was located on the airport, reported that at the time of the accident, the wind was from the south at 10 mph. Additionally, the following was written on a white notepad that was found in the cockpit: "Winds 180-16."

PERSONNEL INFORMATION

The flight instructor was issued an airline transport pilot certificate on May 15, 1996, and was issued his flight instructor certificate (airplane single-engine land and multi-engine land, and instrument-airplane) on February 18, 2001. According to a document that was provided by the CAF, the pilot was initially approved to fly the BT-13A on October 4, 1993. A Flight Resume Sheet that was dated December 1, 2000, revealed that the pilot had accumulated a total of 4,100 flight hours, of which 550 hours were in tailwheel equipped airplanes and 141.5 hours were in the BT-13A. The pilot completed his last biennial flight review on March 22, 1999, and

the check was performed in the BT-13A. Additionally, the pilot held a second class medical certificate that was issued on April 6, 2000. The medical certificate stipulated that he "must have available glasses that correct for near vision."

The commercial pilot receiving instruction was issued a commercial pilot certificate (airplane single-engine land) on July 22, 1988. According to documents that were provided by the CAF and dated April 29, 2001, the pilot was approved to begin transition into the BT-13A on April 26, 2001. The pilot had accumulated a total of 1,460 flight hours, of which 291 hours were in tailwheel equipped airplanes. According to the pilot's flight logbook, he completed his last biennial flight review on March 9, 2000. He held a second class medical certificate that was issued on April 4, 2000. The medical certificate stipulated that he "must have glasses for near vision."

AIRCRAFT INFORMATION

The blue and yellow World War II airplane was equipped with a Pratt & Whitney R985-AN1 radial engine and a two bladed, constant speed Hamilton Standard propeller. The airframe, engine, and propeller underwent their most recent annual inspections on May 3, 2001, and had accumulated a total of 2,228.7 hours, 254.4 hours since major overhaul, and 2,228.7 hours, respectively.

The airplane was not equipped with a stall warning indication system. The following was noted on a notepad that was found in the airplane: "Flap Ind Inop" and "Fwd Tach Inop."

According to the BT-13 Flight Manual, the stall speed with the flaps retracted is 75 mph. The stall speed with the flaps extended 30 or 60 degrees is 65 mph.

METEOROLOGICAL INFORMATION

At 1353, the weather observation facility at MAF, located 7 miles northeast of the accident site, reported the following weather conditions: a few clouds at 6,000 feet, visibility 10 statue miles, wind from 200 degrees at 13 knots and gusting to 20 knots, temperature 82 degrees Fahrenheit, dew point 54 degrees Fahrenheit, and an altimeter setting of 30.11 inches of mercury.

At 1353, the weather observation facility at the Odessa-Schlemeyer Field Airport, Odessa, Texas, (located 9 miles northwest of the accident site) reported the following weather conditions: clear skies, visibility 10 statue miles, wind from 210 degrees at 11 knots and gusting to 19 knots, temperature 84 degrees Fahrenheit, dew point 55 degrees Fahrenheit, and an altimeter setting of 30.12 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

A global positioning receiver (GPS) receiver revealed that the accident site was located at

north 31 degrees 49.728 minutes latitude and west 102 degrees 14.805 minutes longitude. The linear energy path was 1,000 feet east of runway 16/34 and oriented along a magnetic heading of 080 degrees. The dimensions of the initial ground scar, which contained yellow paint chips, were consistent with the dimensions of a wing-tip. A green wing-tip navigation light lens was located adjacent to the initial ground scar. The second ground scar was located 45 feet beyond the initial ground scar and contained blue and yellow paint chips, a piece of the engine cowling, and a scar consistent with that of a propeller slash. The right wing was found fragmented between the second ground scar and the main wreckage. The main wreckage came to rest 121 feet beyond the initial ground scar. The final aircraft component, the "G" meter, was located 274 feet north of the initial ground scar.

Flight control continuity was established for the aileron, flap, elevator, elevator trim, rudder, and rudder trim flight control systems. All cable separations displayed frayed and uneven cable strands, which are signatures of tension overstress.

The flap system was designed so that the flaps could be manually operated through hand cranks, located on the left side of the front and rear cockpits. The hand cranks are turned clockwise to retract the flaps, and counterclockwise to extend the flaps. Approximately 31 turns are required to rotate the flaps between extended and retracted. The hand cranks were moved 10-11 turns in the clockwise direction before reaching their limit. The flap system was comprised of torque tubes and a gear box. The gear box was free to rotate when it was manipulated by hand.

The front and rear cockpits were examined. The front cockpit's flap indicator indicated that the flaps were retracted, and the rear cockpit's flap indicator indicated that the flaps were partially extended. The rear cockpit's attitude indicator indicated nose high and right bank. The front and rear cockpit control quadrants revealed the following: throttle-full forward; propeller-full increase (low pitch); mixture-midrange. The cockpit fuel selectors, for both the front and rear cockpits, were in the right tank position.

The fuel system was compromised during the impact. The right wing was fragmented, and its wet wing type fuel tank was destroyed. The left wing remained intact and contained an undetermined amount of fuel.

The engine and propeller were examined at the accident site. The engine's accessories remained attached to the engine, except for the right magneto and the generator. The engine was intact and did not display evidence of a catastrophic failure. Crankshaft continuity was established from the propeller to the accessory drive gear. The main oil screen was removed and was observed to be free of contaminants. The oil filter was removed from the engine, cut open, and observed to be free of contaminants. The airframe fuel filter was removed and observed to be free of contaminants. The carburetor was intact; however, it displayed soot on its body due to the postaccdient fire. The fuel screen at the carburetor was removed and it was free of contaminants and contained residual fuel. The propeller remained attached to the engine. Both propeller blades exhibited face polishing, "S" type bending, and chordwise

scratches.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on both pilots by the Texas Tech University Health Sciences Center, Division of Forensic Pathology, Lubbock, Texas. The cause of death for both pilots was determined to be blunt impact injuries from an airplane accident.

Toxicological tests were performed on specimens from both pilots by the FAA's Civil Aeromedical Institute of Oklahoma City, Oklahoma. The tests were negative for carbon monoxide, cyanide, ethanol (except for postmortem production), and illegal drugs. The commercial pilot's tests revealed that 11.254 (ug/mL, ug/g) of theophylline was detected in a urine sample. According to an FAA Regional Flight Surgeon, theophylline is a medication used in the treatment of respiratory ailments, and its use is not precluded before flying.

ADDITIONAL INFORMATION

The airplane was released to the registered owner's representative on July 5, 2001.

Pilot Information

Certificate:	Airline transport; Flight engineer; Flight instructor	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 6, 2000
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	March 22, 1999
Flight Time:	4100 hours (Total, all aircraft), 142 hours (Total, this make and model)		

Other flight crew Information

Certificate:	Commercial	**Age:**	54,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 3, 2000
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	March 9, 2000
Flight Time:	1460 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Convair	**Registration:**	N66791
Model/Series:	BT-13A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	3336
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	May 3, 2001 Annual	**Certified Max Gross Wt.:**	4149 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2228.7 Hrs as of last inspection	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Not installed	**Engine Model/Series:**	R-985-ANI
Registered Owner:	American Airpower Heritage Flying Museum	**Rated Power:**	450 Horsepower
Operator:	Confederate Air Force	**Operating Certificate(s) Held:**	None
Operator Does Business As:	N/A	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MAF,2871 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	13:53 Local	**Direction from Accident Site:**	225°
Lowest Cloud Condition:	Few / 6000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	13 knots / 20 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.11 inches Hg	**Temperature/Dew Point:**	28°C / 12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Midland, TX (MAF)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	12:57 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Bates Field Airport 71TA	**Runway Surface Type:**	Gravel
Airport Elevation:	2820 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34	**IFR Approach:**	None
Runway Length/Width:	4400 ft / 80 ft	**VFR Approach/Landing:**	Go around;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Ragogna, Jason
Additional Participating Persons:	William J Fitzgerald; Federal Aviation Administartion; Lubbock, TX Eric Van Hoff; The Confederate Air Force; Midland , TX
Original Publish Date:	August 26, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52257